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TABLE OF CONTENTS

| | |
|---|----|
| Penicillin Prophylaxis of Gonorrhea | 2 |
| Onyalai | 3 |
| Treatment of Leprosy..... | 5 |
| Acute Pulmonary Edema | 9 |
| Cholecystectomy in Patients with Coronary Heart Disease | 10 |
| Volvulus of the Cecum | 13 |
| Late Complications of Pelvic Irradiation | 14 |
| Pheochromocytoma | 15 |
| Personalized Recruiting..... | 18 |
| Medical and Dental Symposiums..... | 18 |
| Training in Special Weapons, Isotopes, and Military Medicine..... | 19 |
| Aviation Medicine Seminar | 20 |
| Excerpts from Address by the Surgeon General | 20 |
| From the Note Book | 21 |
| Board Certifications | 23 |
| Decedent Affairs Program (BuMed Inst. 5360.18) | 25 |
| Medical and Dental Materiel Bulletin (BuMed Inst. 6710.25)..... | 25 |
| Decedent Affairs Program (BuMed Inst. 5360.1A)..... | 26 |
| Fixed Medical Treatment Facilities (BuMed Notice 6320) | 26 |
| Mechanical Imprinting Equipment (BuMed Inst. 6010.8)..... | 27 |

MEDICAL RESERVE SECTION

| | |
|--|----|
| Seminar for Commanding Officers of Reserve Medical Companies | 28 |
| New Courses in Naval Reserve Officers' Schools | 29 |

PREVENTIVE MEDICINE SECTION

| | |
|---|-------------------------------------|
| Safety Measures in TB Laboratory. 30 | Storing Hazards in Void Spaces.. 37 |
| Distribution of Polio Vaccine 35 | Coliform Density 38 |
| Salmonellosis Originating in a Hospital. 39 | |

Policy

The U. S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be nor susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

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Notice

Due to the critical shortage of medical officers, the Chief, Bureau of Medicine and Surgery, has recommended, and the Chief of Naval Personnel has concurred, that Reserve medical officers now on active duty who desire to submit requests for extension of active duty at their present stations for a period of three months or more will be given favorable consideration. BuPers Instruction 1926.1B applies.

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Penicillin Prophylaxis of Gonorrhea

BuMedInst 6222.3B of 25 October 1954, has been interpreted by many as prohibiting the use of oral penicillin for the prevention of gonorrhea. This interpretation is incorrect. Medical officers are at liberty to use this chemoprophylaxis as they desire and should not refuse it to those who request it only on the basis of this instruction.

For the reasons set forth in that instruction, major emphasis on the prevention of venereal diseases should not be focused on chemoprophylaxis, since oral penicillin has been shown to be effective only in the prevention of gonorrhea, whereas the real medical department problem is bound up with other venereal diseases.

* * * * *

Onyalai

Onyalai is an African name used to denote an acute form of idiopathic thrombocytopenic purpura of unknown etiology that is characterized by the sudden onset of prolonged bleeding from blood-filled bullae in the oral cavity and other mucous surfaces. This blood dyscrasia is of relatively frequent occurrence and has been described in many parts of tropical and subtropical Africa, including Nigeria, Tanganyika, Northern Rhodesia, Southern Rhodesia, Bechuanaland, Angola, South West Africa, and South Africa. Only 8 cases in races other than African have thus far been recorded, 6 Europeans, 1 Chinese, and 1 mulatto.

This report is based on personal observations in 9 recent cases of onyalai in Bantu and on a study of the case reports in the literature.

The disease is characterized by an abrupt onset of extensive bleeding from the nose or mouth, which sometimes may be preceded by headache and vague muscular or joint pains of short duration. The most striking feature of onyalai is the constant presence of hemorrhagic bullae on the mucous surfaces of the buccal and labial mucosa, the tongue, gums, palate, and less often the uvula and pharynx. The bullae, varying from 2 mm. to 2 cm. in diameter, are usually multiple, red-blue to black in color, and are raised above the mucous surface.

On rupture of these bullae, blood oozes from the mouth and nose beside formed blood-clots which cling to the surface and present a fungating appearance. The tongue may be swollen and painful, and there is usually a marked pallor of the mucous surfaces of the mouth from the associated anemia. In severe cases, the breath becomes offensive.

Bullae may also appear on the extremities, and purpura in the form of small petechiae are frequent, especially on the skin of the trunk and legs. Conjunctival hemorrhages are often a feature of the condition.

Extensive hemorrhages from other mucous surfaces, including those of the gastrointestinal and urinary tracts, occur less frequently. Instances of intense bleeding from the urinary tract and from the vagina have been described. The onset of menstruation has been stated to produce an exacerbation of the symptoms with consequent danger to life.

Thrombocytopenia is constant. Blood platelets may be absent from the blood smears. When blood platelets are present, they are diminished in numbers, may be distorted, and show variations in size and shape. On recovery, the blood platelet count slowly returns to normal.

Depending upon the amount of blood lost through hemorrhage, the peripheral blood picture shows a normochromic or hypochromic anemia. The red blood corpuscles may then show anisocytosis, poikilocytosis, and polychromasia; nucleated red cells are occasionally seen.

The leukocyte count is not characteristic, and may not vary appreciably from the normal. There may be either leukocytosis or leukopenia.

In the bone marrow, megakaryocytes are usually present in approximately normal numbers or they may be actually increased.

The bleeding time is prolonged. The temperature may be normal, elevated, or subnormal. The pulse rate is generally accelerated, depending upon the blood loss. The spleen may be enlarged. Splenomegaly, however, is of no special significance because it is of common occurrence in natives of Africa where malaria is endemic.

The clinical course depends mainly on the extent of the hemorrhage. It may be short and self-limiting, or the bleeding may cease only after repeated intravenous transfusions of whole blood. Recovery is usually complete, although relapses may occur months after the initial attack. The actual remission rate is difficult to assess after the patients have left the hospital, although Lewis and Lurie recorded remissions in all of their surviving patients. No estimate can be given of the remission rate in the author's series of patients because they were all migratory laborers who returned to their distant homes on the completion of their work-contracts which rarely exceeded one year.

Hemorrhage may persist in spite of treatment. Coma may then intervene, and death may result from exsanguination or from cerebral hemorrhage. The stay in the hospital in the author's series varied from 14 to 53 days.

The disease may occur at any age and in both sexes, but it has most frequently been described in young adult males. The cause of onyalai, like that of essential thrombocytopenia, is unknown. Many causal factors have been suggested, but none have been proved. These factors include idiosyncrasy to toxins derived from chemical substances, native medicines, bacteria, or from insect bites, and deficiencies in vitamins C, K, or P.

Immediate intravenous transfusion with 20 or more ounces of suitably matched citrated whole blood, repeated if necessary, is essential especially in cases with persistent hemorrhage.

Intramuscular injections of 20 ml. of citrated whole blood, as recommended by Blackie, were used either alone or in conjunction with intravenous blood transfusions. Hemotherapy by intramuscular injection, although inferior to that of the intravenous route, has, nevertheless, proved to be of some value in the primitive African surroundings where so many cases occur. Difficulties are experienced in overcoming the superstitions which often prevent Africans from donating their own blood, even to their nearest relatives, and in obtaining assurance that the donors available are free from malaria or syphilis.

There is as yet no known drug which is effective for the control of the hemorrhaging state in onyalai. Penicillin was used in all cases with pyrexia, and sedatives were administered to allay apprehension. The residual anemia appeared to respond well to iron-containing tonics.

No deaths occurred in the present series mainly because facilities were available for prompt hemotherapy.

As yet, there is no specific therapy for onyalai other than immediate intravenous transfusion with suitably matched fresh whole blood. (Berman, C., Onyalai, an Acute Form of Idiopathic Thrombocytopenic Purpura: Am. J. Clin. Path., 25: 1349-1357, December 1955)

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Treatment of Leprosy

Two principal types of leprosy are recognized, lepromatous and tuberculoid, and two intermediate groups, indeterminate or uncharacteristic and borderline (dimorphous). The main types vary greatly in relative frequency in different parts of the world. In the Philippines, for example, lepromatous cases constitute perhaps 40% of total leprosy; in India, this form accounts for only about 20%. Of indigenous cases arising in the continental United States, about 85% are lepromatous.

The lepromatous type is characterized clinically by diffuse infiltration of the skin which becomes thickened, glassy, and corrugated. Localized infiltration may appear as macules or plaques with ill-defined borders, sometimes exhibiting disturbance of sensation. Nodules may develop in normal or infiltrated areas. Mycobacterium leprae is readily demonstrable in smears, and the histologic structure is granulomatous, with "globi" and typical foamy "lepra cells." Lymph nodes, spleen, and bone marrow are invaded. Involvement of the nasal mucosa is common, and extension to the nasopharynx, trachea, and larynx may be a serious complication in late stages of untreated cases. Bacillary invasion of the eye is frequent and extremely serious. Certain peripheral nerves are invaded sooner or later—notably those of the extremities, with consequent anesthesia, atrophy, and deformity, the damage in the end often being equal to that of the tuberculoid type. The patient does not react to intradermal injection of killed leprosy bacilli (lepromin test), and the disease is progressive.

In the tuberculoid type, the characteristic macules (leprides) are erythematous, show clearing at the centers, and have well-defined, often papulated, edges. Anesthesia is invariably present and usually well marked in these macules. Myco. leprae is rarely found in smears from the quiescent lepride, but may be present in great numbers during reaction. The histologic structure shows many epithelioid cells with large nuclei and giant cells of the Langhans type. Involvement of the peripheral nerves is early and marked, and damage therefrom constitutes the most serious feature of this type. The patient reacts to lepromin, and the disease is characterized by long periods

of remission, often punctuated by episodes of reaction during which additional nerve damage takes place.

If flattened skin lesions of a suggestive nature are present but the histologic findings are those of simple inflammation, the case may be classed as indeterminate. Smears are seldom bacteriologically positive, and the lepromin test may be either positive or negative. The borderline group includes cases in which the macules show the clinical and histologic features of both principal types. Smears are usually positive and the lepromin test negative.

The nature of leprosy makes it essential that therapeutic trials be adequately controlled; otherwise, remedies that have value, but fall short of complete success, may pass undetected. The natural course of the disease is prolonged over many years with a tendency to exacerbation and remission. Clinical changes that are rapid and readily observable may occur, but usually they are of slow evolution especially in the lepromatous type. In this type, bacteriologic changes are likewise slow and their measurement difficult. Finally, there is no method for distinguishing active, multiplying leprosy bacilli from those which may be damaged or dead.

The history of the treatment of leprosy with chaulmoogra oil is illuminating. For generations, this oil has been the popular remedy, and its esters and other derivatives have been in world-wide use for half a century. Hundreds of favorable case reports appeared with photographs before and after therapy and imposing statistics of arrest of the disease. Controlled studies were not made and probably became impossible to make, so universal did faith in the remedy become. Consequently, any value that chaulmoogra oil may have in leprosy has not been established. Its use has been gradually abandoned during the last decade.

In the sulfone group of drugs, (R-SO₂-R) the sulfonyl radical is combined with two carbon atoms whereas in the sulfonamides (R-SO₂-NH₂) this radical is combined with one carbon atom and an amino group. It is of interest that the so-called basic sulfone, 4-4' diaminodiphenyl sulfone (DDS) was synthesized in 1907 by Fromm and Wittmann but was not tried in infections of animals until 1937.

In 1941, after promising results in experimental tuberculosis obtained by Feldman, Hinshaw, and Moses at the Mayo Foundation, a sulfone was first used in the treatment of human leprosy by Faget and his associates at the Public Health Service Hospital, Carville, La. The drug was glucosulfone sodium and called Promin. This proved too toxic for oral use but was well tolerated when given intravenously. Soon afterward, sulfoxone sodium (Diasone) was synthesized and found to be suitable for use by mouth, and reported to be effective by Muir in Trinidad. Many other preparations for oral use followed.

There is no clear indication that any sulfone compound is more effective than another in the therapy of leprosy.

Since 1951, carefully controlled therapeutic trials of sulfones and other drugs in treatment of the lepromatous type have been conducted by the Leonard Wood Memorial. In the first series, 6 comparable groups at each of 4 leprosariums—2 in Japan, 1 in the Philippines, and 1 in South Africa—were placed respectively on Diasone; DDS; dihydrostreptomycin sulfate (DHSM); DHSM and Diasone; and DHSM and sodium para-aminosalicylate (PAS)) and a control drug.

It was concluded that Diasone, DDS, and DHSM are of about equal value so far as judgment could be made after 48 weeks of therapy. The results were disappointing in that combined treatment with Diasone and DHSM, or with DHSM and PAS, offered no advantage.

Isoniazid, either alone or in combination with a sulfone or with DHSM, is not superior to a sulfone or to DHSM used singly in treatment of lepromatous leprosy so far as can be determined by one year's treatment.

Amithiozone (TB 1/698) has been the subject of many case reports. At the Sixth International Congress on Leprosy in Madrid in 1953, it was concluded that the value of amithiozone could not be definitely appraised. It was recommended that it should be used only as an alternative in patients who did not tolerate, or failed to respond, to sulfones.

The opinion that natural reactivity to lepromin is an indication of some degree of resistance to leprosy has led to attempts to induce reactivity in lepromatous patients by artificial means.

Treatment with mycobacterial vaccines or their products is not new. More than 50 years ago Deycke prepared an extract of an acid-fast micro-organism cultivated from a leprous nodule. A mixture of this extract and benzyl chloride, called Nastin B, was used by a number of workers in treatment of leprosy, but the results were unsatisfactory. Repeated injections of suspensions of leprosy bacilli were given by Dharmendra, Lowe, and Mukherji in an unsuccessful attempt to induce reactivity to lepromin in patients with negative reactions. Tuberculin injections have been tried by several workers with adverse results for the most part.

At Carville, parenteral administration of cortisone or ACTH has been used in the various acute episodes of leprosy. Doses have varied from minimal amounts for a few days to the limits consistent with safety. Cortisone has been continued for as long as ten months in an attempt to control fever, erythema nodosum, and neuritis and to permit continuance of sulfone therapy. Transitory improvement has usually followed; in some cases, however, these reactive conditions have persisted in spite of very high dosage. At present, these hormones are being used infrequently because of toxicity and because of the possibility of aggravating the underlying bacterial infection. During recent months, a few patients have been given Meticorten and fewer undesirable side effects have been noted.

Leprosy affects the eye in two ways. Lagophthalmos occurs in both types of the disease, but more commonly in the tuberculoid. It may lead to

injury of the cornea with consequent keratitis and ulceration. The lepromatous type may affect almost any portion of the eye or adnexa. Involvement of the conjunctiva is rare. The cornea is especially vulnerable to lepromatous infiltration and ulceration. Recurring and painful attacks of iritis and iridocyclitis follow. Eventually, blindness results.

At Carville, local applications of cortisone solution have been very useful. Remission of the acute process is only temporary, but the treatment appears to be equally effective on recurrence. Whether lepromatous keratitis and iridocyclitis can be kept under control indefinitely remains to be seen, but in the meantime pain is relieved and possession of useful sight is prolonged.

It may be stated that by far the greatest advance in treatment of leprosy in recent years has been the introduction of the sulfones. These drugs, however, are neither curative nor bactericidal. They are of special value in healing lepromatous ulcers and long-continued therapy seems to assist natural processes of recovery by repressing multiplication of the bacilli. The disease apparently becomes arrested in a considerable proportion of cases. An appreciable proportion, however, relapse and may become refractory to further sulfone treatment. The Leonard Wood Memorial studies show dihydrostreptomycin to be of equivalent value to the sulfones as far as can be judged after one year of therapy. Combined treatment with a sulfone and dihydrostreptomycin offers no advantage. Except for dihydrostreptomycin, the antibiotics that have been tried are of value only in treatment of secondary infections.

In the tuberculoid type, the value of sulfone therapy is indicated by several reports, especially that of Lowe from Nigeria, but remains to be established by controlled studies. Tuberculoid macules may become inactive without treatment of any kind, but sensory changes remain in the residual and often depigmented scars.

It should be emphasized that no method for treatment of leprosy has restored, or can be expected to restore, the anesthetic and trophic effects resulting from invasion of peripheral nerve by Myco. leprae. This invasion occurs early in the disease, especially in the tuberculoid type. It is also an unfortunate fact that early diagnosis is the exception; frequently, the disease goes unrecognized for several years. There is, therefore, urgent need for educational measures directed toward earlier recognition, as well as for discovery of a bactericidal drug. (Doull, J. A., Wolcott, R. R., Treatment of Leprosy: New England J. Med., 254: 20-24, January 5, 1956)

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The printing of this publication has been approved by the Director of the Bureau of the Budget, 16 May 1955.

Acute Pulmonary Edema

The term "pulmonary edema" carries with it different associations to different specialists: to the pediatrician, acute glomerulonephritis or rheumatic carditis; to the surgeon, thoracic or abdominal intervention; to the neurologist, cerebrovascular accident or trauma to the skull; to the cardiologist, hypertension, coronary occlusion, or mitral stenosis.

Contrary to a widely accepted view, acute pulmonary edema can be encountered in a great variety of conditions as shown by necropsy findings.

The most common causes of pulmonary edema in clinical cases are: (1) pulmonary edema and arterial hypertension, (2) pulmonary edema and coronary heart disease, (3) pulmonary edema and cerebral diseases, (4) pulmonary edema and pulmonary heart disease, (5) pulmonary edema in trauma to the chest, (6) pulmonary edema in mitral stenosis, (7) pulmonary edema and infections, and (8) pulmonary edema and shock.

An attack of pulmonary edema may occur at any time of day or night. Precordial oppression or pain, restlessness, weakness, and dry nonproductive cough may precede the attack. If this occurs at night, a nightmare frequently precedes the paroxysm. Respiration becomes difficult and labored and is usually accelerated. The patient sits up in bed and may lean forward. Within a few minutes, gurgling sounds can be heard and the patient repeatedly emits a white, yellowish, or pink frothy sputum. This may vary from a few bubbles to enormous amounts (as much as 2000 to 3000 cc. of foam within one to two hours). Cold, clammy extremities and paroxysms of suffocation and vomiting may occur. The pulse and blood pressure differ in the two main types of attacks as follows:

1. In most cases connected with coronary occlusion, pulmonary embolism or allergic shock, the pulse is rapid and small (and may be irregular) and the blood pressure drops gradually, sometimes reaching shock level. Some cases of rheumatic mitral lesion also exhibit a drop in blood pressure.

2. Other cases, particularly those with hypertensive or syphilitic heart disease or those with a cardiovascular accident, present a full pulse and a blood pressure either equal to or higher than the previous level.

Physical examination reveals a high, tympanic percussion note over the lung fields and innumerable moist rales over the entire chest which arise in the small bronchi, and gurgling sounds created by the foam in the trachea.

X-ray of the chest reveals extensive shadows in both lung fields.

The temperature is usually normal during the attack except with inflammatory edema, but may rise soon afterward because of reabsorption of altered proteins from the lungs.

The sputum has a chemical composition similar to the fluid of angioneurotic edema or allergic coryza, and to the inflammatory effusions of large serosal cavities. This is true, not only of clinical episodes, but also of experimentally induced attacks.

Catheterization of the right heart has revealed that pulmonary arterial pressure is severely increased and that pulmonary "capillary" pressure rises to 32 to 54 mm. Hg during the attack.

Pulmonary edema may be fulminating, acute, or protracted. Two clinical types can be recognized, that associated with a full pulse, a high blood pressure, and a high output, and that associated with severe blood pressure drop, low output, and tendency toward shock.

Therapy of pulmonary edema is based on the use of drugs and physico-chemical means. Among the most successful drugs are morphine, mercurial diuretics, and sympatholytics; oxygen therapy, pressure respiration and venesection may also be useful. Most of the foregoing drugs and physical procedures tend to decrease venous return and cardiac output; therefore, while helpful in patients of group 1, they may induce shock in patients in group 2.

Digitalization during the attack is considered of questionable value, particularly in cases of myocardial infarct, mitral stenosis, or exposure to toxic gases. It may be useful in the prevention of the attacks.

Antifoaming therapy is a purely symptomatic treatment which tends to break a self-perpetuating cycle by modifying the surface tension of the froth, thus reducing its volume. This procedure has been shown to be of definite value and should be used routinely as the first remedy, even preliminary to a brief study of the case. Drug therapy and other physical measures should be employed later after an evaluation of the clinical picture, and, especially, if antifoaming therapy fails to terminate the attack. (Luisada, A. A., *Cardi. L., Acute Pulmonary Edema, Pathology, Physiology, and Clinical Management: Circulation, XIII: 113-131, January 1956*)

(Reference is made to Medical News Letter, Vol. 24, No. 11, & Vol. 25, No. 7)

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Cholecystectomy in Patients with Coronary Heart Disease

That chronic cholecystic disease and coronary heart disease frequently occur in the same person is an accepted fact, but the possibility of an etiologic relationship between the two has been the subject of wide speculation. Many consider that the mere existence of gall-bladder disease has a deleterious effect on the heart.

Although the question of a possible etiologic relationship between coronary heart disease and cholecystic disease must remain unanswered for the present, practical lessons can be learned from the analysis of the records of patients with coronary heart disease who have undergone cholecystectomy. This study was undertaken with essentially two questions in mind: How well do patients with coronary heart disease tolerate removal

of a diseased gallbladder? Does the removal of such a diseased gallbladder influence the subsequent clinical course of the patient with coronary heart disease?

The records of all patients who had undergone cholecystectomy at the Mayo Clinic in the 5 years from 1948 through 1952 were reviewed. Those who had been given a diagnosis of coronary heart disease before operation were selected for special study. There were 100 such patients. The period selected was recent enough to judge the surgical risk in terms of antibiotics, anticoagulants, and special procedures in anesthesiology, and sufficiently remote to gauge survival rates. Cholecystectomy was performed on 5891 patients during this period with an over all mortality rate of 0.9% (53 cases). These figures represent all gallbladder procedures whether done for primary cholecystic disease or in the course of other intra-abdominal procedures.

There were 64 males and 36 females in this series, a ratio which is more in keeping with the incidence of coronary heart disease than of gallbladder disease.

The diagnosis of coronary heart disease was made on the basis of (1) a history of thoracic distress which conformed to the characteristics of angina pectoris (80%), and (2) a history consistent with previous myocardial infarction (31%) usually supported by a subsequent history of coronary insufficiency (angina pectoris or dyspnea) or, electrocardiographically, by relics of such an event or by both.

The degree of coronary insufficiency was graded in accordance with the amount of effort the patient was able to tolerate. Only one patient gave a history of angina at rest; 46 patients experienced angina on mild to moderate exercise; 36 with more strenuous exercise, and 17 were asymptomatic on the program which they followed. All 17 patients in the last category gave a history of previous myocardial infarction and 15 of them had significant electrocardiographic relics. No patients in the series had recently suffered from acute myocardial infarction.

The diagnosis of gallbladder disease was made on the basis of (1) a typical history of biliary colics (66%), with a history of jaundice in 19; (2) the occurrence of acute cholecystitis, (6%) and (3) abdominal complaints ranging from mild dyspepsia to severe abdominal pain of atypical location or character in association with abnormal cholecystographic findings. In this series, a nonfunctioning gallbladder or a poorly functioning gallbladder was as significant as the actual visualization of stones when the history was in keeping with a diagnosis of chronic cholecystic disease. Only one patient in the entire series was found to have no stones at operation.

The accuracy of the clinical appraisal of the gallbladder status is reflected in the pathologic findings at the time of operation. Stones were present in 99 of these patients; common-duct stones were encountered in 20, and stones were found in the cystic duct in 10 other patients. The commonest

finding in association with gallstones was chronic cholecystitis, but in 6 cases, the gallbladder was acutely inflamed and was the cause of emergency admission to the hospital. In 10 other patients, the gallbladder was described as subacutely inflamed. Hydrops of the gallbladder occurred twice in the series.

Seventy-three percent of the women had high blood pressures in contrast to twenty-seven percent of the men. The hypertension of most patients was of group 1 to 2 on the basis of examination-of-eye grounds; none of the patients had retinitis. Arteriosclerosis obliterans of the lower extremities occurred in 8% of patients, diabetes in 7%, and cerebrovascular accidents had occurred preoperatively in 7%. Duodenal ulcer was encountered in 8%, and diaphragmatic hernia in another 5%. Asthmatic bronchitis with emphysema was noted in 4%, and nephrolithiasis in 3%. One patient had paroxysmal auricular fibrillation associated with two attacks of gallbladder colic.

The usual routine operative precautions consisted of alerting the anesthesiologist and the surgeon to the diagnosis of coronary disease. This simple expedient assisted in the choice of anesthetic, (usually a mixture containing a high percentage of oxygen), suggested that fluid be administered cautiously, and warned the operating-room team to be more than ordinarily prepared to meet cardiac emergencies. Early ambulation was encouraged, and in some cases, anticoagulants were employed.

The greatest single postoperative complication was thrombophlebitis which occurred in 7% of patients. Wound infection, unexplained fevers, and pneumonia each accounted for morbidity in 4%. At the completion of this study, information regarding 95 patients was available.

The survival rate of this group of patients 6 years after operation was 70.6% as compared with 83.9% in the normal population of similar sex and age constitution. This study establishes the relatively low risk of cholecystectomy in patients with symptomatic coronary heart disease and emphasizes the dangers inherent in the complications of chronic biliary disease itself. Such complications must be considered even more serious in patients with coronary heart disease. It is doubtful whether removal of a diseased gallbladder influences the course of coronary artery disease directly, but it is likely that life may be prolonged by preventing the serious complications of biliary disease by performance of cholecystectomy preferably during the quiescent phases of gallbladder disease. (Keys, J. R., Dry, T. J., Walters, W., Gage, R. P., Cholecystectomy in Patients with Coronary Heart Disease: Proc. Staff Meet. Mayo Clin., 30: 587-594, December 14, 1955)

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Volvulus of the Cecum

Volvulus of the cecum is seldom considered in the differential diagnosis of right-sided pain. Many of the recorded cases of acute volvulus of the cecum indicate that 21% of the patients in this condition had undergone previous surgery. The lesion presents a bizarre symptomatology and there is no definite pattern or signs or symptoms which can aid in arriving at a clinical preoperative diagnosis of this condition. X-rays, and chiefly barium enema of the colon, are the decisive factors in establishing the diagnosis of cecal volvulus. Because the mortality rate is well above 50%, the importance of early diagnosis of this lesion cannot be overemphasized.

Burbank and Ryan enumerated six criteria whereby early diagnosis of cecal volvulus could be made on the x-ray film. These are: (1) great distention of the cecum which is ectopically placed, located frequently in the left upper quadrant; (2) distended loops of small bowel located at the right of the cecum; (3) visualization of the ileocecal valve to the right of the cecum when the cecum is outlined by gas; (4) mucosal folds at the point of obstruction may be outlined by gas and assume a spiral contour; (5) evidence of obstruction of the small intestine; and (6) presence of a single fluid level in the cecum.

Faltin divided cecal volvulus into two varieties, saccular and tubular. The saccular type gives rise to symptoms characteristic of an obstructive lesion, while the tubular type gives rise to signs and symptoms of strangulation. The lesion may be either acute or remittent and can assume either clockwise or counter clock wise rotation. The torsion can be complete (360 degrees).

From a clinical point of view, the only diagnosis that can be made in a case of acute cecal volvulus is intestinal obstruction. The only positive manner of arriving at a correct and early diagnosis is by careful roentgenographic studies. The barium enema of the colon and the evacuation film definitely establish the diagnosis.

Cecal volvulus is a serious condition and early diagnosis should help reduce the mortality rate. The possibility of this condition should be noted in those cases in which there is bizarre symptomatology of abdominal pain without definite localization, nausea, vomiting, and constipation. Physical examination may reveal evidence of intestinal obstruction.

Roentgenologic examination, especially of barium enema of the colon, is the decisive factor in arriving at a correct diagnosis. It demonstrates the obstruction of the ascending colon distal to the dilated cecal sac. In these cases, there are dilated loops of ileum to the right of the cecum, and the extopically placed gas sac lies up and to the left of the colon beneath the dome of the left diaphragm. The spiral torque produced by the mucosal folds of the colon and the gas in the cecum indicates the site of the obstruction.

The type of operation necessary depends upon the extent of the pathologic process, the duration of obstruction, the condition of the bowel at the time of laparotomy, and the physical condition of the patient. The types of operation performed are: (1) exploration and aspiration, (2) cecostomy, (3) cecopexy, (4) detorsion, (5) enterostomy, (6) exteriorization, (7) Mikulicz's operation, and (8) resection with end-to-end anastomosis. The earlier the operation is performed, the better the results; and the earlier the diagnosis is made, the lower the mortality rate. (Weiner, J. J., Volvulus of the Cecum: Am. J. Surg., 91: 66-69, January 1956)

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Late Complications of Pelvic Irradiation

The value of irradiation therapy in the management of pelvic neoplasms has been well established. Improvements in methods of shielding and calculation of tissue dosage have resulted in admirable therapeutic success with minimal complications. A certain number of cases of injury to adjacent organs continue to occur, however, and among these are some which fall to the lot of the urologist to manage. Of these, vesicovaginal fistulas and ureteral obstruction are among the most numerous and most difficult.

Vesicovaginal fistula, often compounded by involvement of the colon or rectum, with a resultant incontinent cloaca-type of existence for the unfortunate patient, is seen as a late complication of irradiation therapy in 2% of cases of carcinoma of the cervix so treated. The incidence is much higher in diabetic patients, 60% of whom may be expected to have this complication. Associated sepsis, cachexia, and anemia due to infection and continued loss of protein and blood make the problem of reparative surgery seem almost impossible. Attempts to close the large defects in the bladder and vagina often fail because of the extensive fibrosis and atrophy of the tissues secondary to irradiation. In many cases, it becomes apparent that permanent correction of these defects is impossible, and diversion of the urinary and fecal streams becomes necessary. After correction of the depleted protein stores and blood volume by proper diet and multiple transfusions, and control of sepsis by antibiotics and such emergency diversionary methods as nephrostomy, there remains the problem of a permanent type of diversion of the urinary flow.

The isolated ileal segment which Bricker has described and found so satisfactory in the management of patients on whom he performed pelvic exenteration, appears to offer such a solution. This method of urinary diversion has been used in 6 cases of vesicovaginal fistula in the past 2 years. The results to date are so satisfactory that they are presented as a note of encouragement in an otherwise dark and depressing urologic dilemma.

Injury of the ureter by irradiation therapy occurs much more frequently than is generally suspected. Careful and complete urologic investigation, carried out in the course of long term follow-up studies in patients so treated for carcinoma of the cervix, indicate an over all incidence of ureteral damage as high as 25%. About 5% are serious enough to require treatment.

Transitory hydronephrosis is common early in the course of treatment. Late fibrosis and stricture are often asymptomatic and may be missed unless carefully sought. When such a case is discovered, it is necessary to rule out recurrence or metastatic carcinoma for it is felt that only palliative treatment is indicated if carcinoma is found. In patients who appear to be free of carcinoma and have serious ureteral damage, the usual methods of management such as reimplantation and the Boari-Ockerblad procedure may be impossible because of the marked perivesical irradiation reaction and length of the damaged segment of ureter.

The clinical course and pyelographic follow-up of all patients in whom a segment of ileum has been used as a urinary conduit have been very satisfactory. Except for one or two instances, where it was obviously due to technical difficulties or pre-existing disease, pyelonephritis has not occurred. Electrolyte disturbances have been minimal and in every instance apparently have been directly related to pre-existing renal damage or to transient postoperative hydronephrosis. As Lapides has so well demonstrated, hyperchloremic acidosis after ureteroenterostomy is due to absorption of urinary constituents in the presence of renal damage. The fact that hyperchloremic acidosis was noted during the transient hydronephrosis in several cases and vanished when the drainage of the kidney improved, confirms this. No patient has complained of anorexia or any other symptoms of electrolyte disturbance. All have been very satisfied with their ileostomy and find the adherent bag to be safe from leaks and easy to manage. Experience has been similar in 10 additional patients in whom ureteroileostomy was carried out for other reasons. (Murphy, J. J., The Management of Some Late Complications of Pelvic Irradiation: J. Urol., 74: 780-788, December 1955)

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Pheochromocytoma

Pheochromocytoma is an uncommon cause of clinical hypertension. Although its exact incidence is unknown, an estimate based upon surgically explored hypertensive patients is 0.47%. The true incidence, because of many unrecognized cases, is undoubtedly higher. Because surgery will effect cure, clinical recognition is the direct responsibility of every physician. Several reviews, recently published, emphasize various aspects

of the problem. Pheochromocytoma masquerades in many clinical forms, notably hypertensive vascular disease, fluctuating or even malignant in type, renal disease, diabetes mellitus, hyperthyroidism, toxemia of pregnancy, psychoneuroses, and others.

The hypertensive pattern of pheochromocytoma falls commonly into two large groups, the paroxysmal and the persistent form, the latter predominating statistically. Blood pressure fluctuates widely in both types from varied, often slight, stimuli. While the persistent type tends to mimic chronic hypertensive disease, the paroxysmal form is characterized by "seizures" or "attacks," during which blood pressure rises sharply, an important diagnostic point. The release of epinephrine and norepinephrine to the circulation from chromaffin tumor cells underlies the varied clinical manifestations of pheochromocytoma.

Numerous important clues warrant suspicion of the presence of pheochromocytoma: (1) "seizures" or "attacks," characterized by headache, palpitation, dyspnea, weakness, chest or abdominal pain, nausea, vomiting, flushing, pallor, dizziness, nervousness, blindness, tingling, and convulsive twitching in various combinations, particularly when accompanied by paroxysmal rise in blood pressure; (2) "seizures" precipitated by emotional disturbance, change of body position, abdominal palpation, histamine administered for gastric analysis, trauma of various types, anesthesia or surgical manipulation; (3) hypertension, fluctuating or persistent, in any young individual, or rising blood pressure early in pregnancy, suggesting toxemia; (4) hypertension associated with fever, unexplained sweating, glycosuria, hyperglycemia, hypermetabolism, or neurofibromatosis.

Pharmacologic tests for pheochromocytoma are divided into two groups: Provocative, employing histamine, methacholine, and tetraethylammonium; and adrenergic blocking procedures, utilizing piperoxan (Benodaine), phentolamine (Regitine) and Dibenamine. Tests should be performed only after the patient has rested in bed comfortably in a quiet room for from 15 to 30 minutes to insure stable control blood pressures. Complete freedom from drugs, particularly sedative and antihypertensive compounds for at least 48 hours or more prior to testing, is necessary to avoid "false"-positive or "false"-negative results. After administration of a test dose of drug, observations should be continued for 15 minutes or longer so that wavering blood pressure responses may not lead to false conclusions.

Provocative tests depend upon stimulation of chromaffin tissue directly or reflexly to deliver epinephrine and norepinephrine to the circulation in excessive quantities. Histamine and tetraethylammonium are administered rapidly intravenously and methacholine is administered subcutaneously. A positive test exhibits a preliminary fall, followed by rapid rise in blood pressure to levels well above those produced by the cold pressor test. Provocative agents are used in those patients exhibiting paroxysmal hypertension whose control pressures are below 170/110 mm. Hg.

As a guide to the interpretation of provocative tests, a preliminary cold pressor test should be performed as a measure of blood pressure reactivity to a standard stimulus. Smithwick felt that a normal cold pressor response in a hypertensive should arouse suspicion of pheochromocytoma. The frequency of hyper-reactors (blood pressure rising above 20/15 mm. Hg) among proved pheochromocytomas invalidates the diagnostic significance of this test.

The most important item in the diagnosis of pheochromocytoma is a high index of clinical suspicion. Once the possibility is entertained, no single test can be considered reliably diagnostic or exclusive, whether positive or negative. Suspicious tests require repetition and then confirmation by different drugs. As a provocative agent, histamine appears the most reliable. Results should be checked with tetraethylammonium and methacholine, for which additional reported experiences are needed. For routine screening of hypertensive patients in large numbers, phentolamine intramuscularly or intravenously is the drug of choice. Piperoxan, because of distressing pressor responses in some patients, is most useful as a secondary check upon phentolamine responses. Dibenamine too often lowers the blood pressure of hypertensive patients to possess diagnostic significance. Patients whose blood pressures fluctuate widely should be submitted to both provocative and adrenolytic drugs at appropriate levels of blood pressure. Spontaneous fluctuations in blood pressure necessitate caution in the selection and interpretation of single tests. Alarming symptoms are sometimes produced by provocative procedures and by piperoxan; one death has followed the use of tetraethylammonium.

Tests must be intelligently selected for each patient and carefully performed according to accepted techniques in the absence of drug interference. Under these conditions, pharmacologic tests will prove of greater diagnostic value and the incidence of "false" tests will be reduced to a minimum. All patients below the age of 60 years, who have sustained hypertension, deserve routine screening for pheochromocytoma by the use of an adrenolytic drug. Tests for catecholamines in blood and urine appear to be the most reliable of all diagnostic methods for pheochromocytoma but present the greatest technical difficulties. Pharmacologic tests, because of their simplicity, should be performed first, and each suspicious case should be checked by chemical methods if possible before submitting the patient to surgical exploration. (Orgain, E.S., Pheochromocytoma - The Value of Certain Tests Used Routinely in Diagnosis: Ann. Int. Med., 43: 1178-1190, December 1955)

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Please forward requests for change of address for the News Letter to: Commanding Officer, U. S. Naval Medical School, National Naval Medical Center, Bethesda 14, Md., giving full name, rank, corps, and old and new addresses.

Personalized Recruiting

NavPers 36112 is a booklet which summarizes the Chief of Naval Personnel's Master Recruiting Plan for the fiscal year 1956. This plan spells out in detail the various recruiting and reenlistment measures being planned and implemented by the Chief of Naval Personnel.

The summary seeks to present in quick and easy-to-read fashion the tasks that can be performed at all levels, bureau, district, station, ship, and by individual officers and enlisted men to promote better recruiting and reenlistment of the best men.

For officers in command, this summary is a useful stimulus and a checkoff for their organized efforts. What's to be done and who should do it is a matter of local determination, but should be spelled out by each command as assignments are made. The object of the Master Recruiting Plan is to make every officer and man a recruiter — "Personalized Recruiting" to the greatest extent possible.

The Navy is only as good as its men, and the Navy recruits and trains its men. Therefore, recruiting and reenlistment are vital concerns of all officers and men — active, inactive, and retired — who want the Navy to have none but the best on its team.

The Navy has always centered responsibility in individual officers and men. It is suggested, therefore, that commanding officers use this summary of the Master Recruiting Plan for Fiscal 1956 as a means of listing what their commands should do and which officers and men by name should be responsible for carrying out the projects. This pamphlet will serve as more than a simplified summary; it will act also as a stimulus and a monitor of specific actions to improve recruiting and reenlistment.

The summary was prepared by the Executive Secretariat of the Ad Hoc Committee on Recruiting. Please address Chief of Naval Personnel (Pers 17) for copies and if it is desired to comment on the booklet.

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Medical and Dental Symposium - First Naval District

A three-day Medical and Dental Symposium for the Armed Services has been scheduled for 21, 22, and 23 March 1956. The theme topic is "Developments in Military Medicine and Dentistry with Special Emphasis on Atomic Warfare, Special Weapons, and Isotopes."

The meeting on the first day will be conducted at the U.S. Naval Hospital, Chelsea, Mass. On the mornings of the second and third days, clinics will be scheduled at various hospitals in the city of Boston on the "Treatment of Diseases with Radioactive Isotopes." Afternoon lectures will be given at the Jimmy Fund Foundation Building and in the auditorium at the New England Deaconess Hospital.

Among the prominent speakers are the Honorable Christian Herter, Governor of the Commonwealth of Massachusetts; Frank Berry, M. D., Assistant Secretary of Defense for Health and Medicine; Rear Admiral Bartholomew Hogan, Medical Corps, U.S. Navy, Surgeon General of the Navy; Rear Admiral Ralph W. Malone, Dental Corps, U.S. Navy, Assistant Chief of Bureau of Medicine and Surgery for Dentistry; Brigadier General Elbert DeCoursey, Medical Corps, U.S. Army, Commanding Officer of the Army Medical Service School; Captain George M. Lyon, Assistant Chief Medical Director for Research and Education, U.S. Veterans Administration, Washington 25, D. C.; Charles L. Dunham, M.D., Director, Division of Biology and Medicine, U.S. Atomic Energy Commission, and Captain Shields Warren, Medical Corps, U.S. Naval Reserve, Professor of Pathology, Harvard Medical School, and formerly Director of the Division of Biology and Medicine, U.S. Atomic Energy Commission.

Programs and additional information may be obtained by addressing the District Medical Office, First Naval District, 495 Summer Street, Boston 10, Mass. This Symposium has been approved for retirement point credit for those in attendance who are on the Active Status List in the Armed Services Reserve Programs. (DMO, 1st ND)

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Training Course in Special Weapons, Isotopes,
and Military Medicine

The fifth annual course, "Special Weapons, Isotopes, and Military Medicine," will be presented by the Commandant, Twelfth Naval District, and sponsored by the Inspector, Naval Medical Activities, Pacific Coast, during the period 27 February through 2 March 1956, at Building 2, U.S. Naval Reserve Training Center, Treasure Island, San Francisco, Calif.

This course is conducted primarily for the purpose of providing Reserve Medical Department officers of the Armed Forces an up-to-date review of problems and information relating to the various medical aspects of special weapons and radioactive isotopes, with primary emphasis on their application to military medicine and dentistry, and civil defense. A special effort has been made to present subjects and speakers at this course which are different from previous years, which should make the course more interesting and worthwhile for those who attended previous courses.

Eligible Reserve officers may receive retirement point credits for attending on the basis of one (1) point for each day of attendance. Those desiring point credit for attendance must obtain authority and active duty training orders to assure accreditation. Officers who hold appropriate

duty with pay orders may receive pay as well as retirement points for attending the course. In addition, allotted funds are available to pay approximately seventy-five (75) persons (with the rank of Lieutenant Commander and below) who are not in pay status. Others in non-pay status may attend and receive retirement credit.

All Reserve Medical Department officers who are on the active status list, and who have not performed more than nine (9) days active duty for training since 1 July 1955, are eligible to attend this course with accreditation of points and pay within limits of established quota. All others are invited to attend without pay or retirement point accreditation. (DMO, 12th ND)

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Aviation Medicine Seminar

Change No. 3 to BuPers Instruction 1571.4A (Naval Reserve Active Duty Training - Fiscal Year 1956) has officially approved a seminar in Aviation Medicine to be conducted under the sponsorship of the Office of Naval Research and the Naval Air Training Command. This seminar will be conducted by the U.S. Naval School of Aviation Medicine at Pensacola, Fla., during the period 13 - 26 May 1956.

The seminar will be devoted to scientific and operational problems related to the human factors in Naval Aviation. The subject matter will be of interest to physicists, chemists, mathematicians, biologists, physiologists, psychologists, and to other scientists in fields allied or basic to medical research.

In addition to 50 billets allocated for members of Reserve Research Companies, 50 spaces will be available to members of other Naval Reserve programs or of the Army or Air Force Reserve. Applications from members of programs other than the Research Reserve should include a summary of qualifications. Secret clearance will be required. (Office of Naval Research)

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Excerpts from an Address by the Surgeon General

"I doubt if there has ever been a time in the history of the Medical Department of the Navy when the wives of our medical and dental officers played a more important role than at the present time. We, as officers, realize—and perhaps we even take for granted at times—the countless things you do which make us ever thankful that we have a family and a

home which serves as a place of refuge from the worries and problems with which we are constantly confronted.

Your ability to accept the adverse conditions inherent in the life of a military officer is a great tribute to your understanding manner and uncomplaining attitude. When I referred a moment ago to the importance of the role you played today, I was thinking of the difficulties our Department faces in maintaining an adequate number of career medical and dental officers to effectively discharge our responsibilities. Many times, when an officer decides that he must leave the Service, he gives as his reason the fact that his wife prefers the stability that goes with civilian practice. I know that those of you who have been in the Service for some time have done all you can to make the wives of new officers feel that they belong. It is very difficult for a medical or dental officer to perform his duties to the best of his ability unless his wife and family are happy.

If you are contented as the wife of one of our officers, I hope you will try to spread your enthusiasm among the wives of the younger officers and assist them in understanding the pride which all of us feel in the job we are doing for our country, and also to convey to them the many rewarding features of military life which we have come to enjoy."

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From the Note Book

1. Dr. F. B. Berry, Assistant Secretary of Defense (Health and Medical) addressed the Surgeon General of the Navy and his staff in the Bureau of Medicine and Surgery on January 12, 1956. Dr. Berry's presentation included a general discussion of the Medical Education for National Defense Program; the Technical Assistance Program for Nutrition; and the Armed Forces Career Incentive Program for Medical officers. (TIO, BuMed)
2. Captain E. T. Knowles, MC USN, Executive Officer, U.S. Naval Hospital, Bremerton, Wash., and LTJG L. J. Arnold, NC USNR, also attached to the Bremerton Naval Hospital, were recently awarded Letters of Commendation by the Secretary of the Navy for heroic service and achievement in the line of their respective professions while serving at the U.S. Naval Hospital, Bremerton, Wash. (TIO, BuMed)
3. CDR P. R. Cox, MSC USN, was recently commended by the Chief of the Bureau of Medicine and Surgery for his outstanding performance of duty while serving as the Administrative Officer to the Commanding Officer of the National Naval Medical Center, Bethesda, Md., from March 26, 1953, to the present. (TIO, BuMed)

4. Chief Hospital Corpsman D. E. Reiff, USN, has been awarded the Bronze Star Medal by the Secretary of the Navy for the President of the United States, for meritorious service while attached to the First Marine Division in connection with operations against enemy aggressor forces, and after the signing of the truce agreement in Korea from December 6, 1952 to September 23, 1953. (TIO, BuMed)
5. Dr. P. D. White, Clinical Professor at Harvard University Medical School, discussed "Epidemiological Research in Cardiovascular Disease" at the National Naval Medical Center, Bethesda, Md., on January 26, 1956. (TIO, BuMed)
6. Dr. T. L. Hill, a physical chemist of the Naval Medical Research Institute, National Naval Medical Center, Bethesda, Md., has been selected by the Washington Academy of Sciences to receive their 1955 Award for Scientific Achievement in the Physical Sciences. This coveted award was granted in recognition of outstanding contributions to physical and biological chemistry. (TIO, BuMed)
7. LT T. A. Dooley, III, MC USNR, is presenting a series of lectures in St. Louis, Mo.; Miami Beach, Fla.; and New York City, on the American Navy's "Passage to Freedom," telling the story of the evacuation of 750,000 Vietnamese. (TIO, BuMed)
8. On December 9, 1955, six members of the staff of the Naval Hospital, Guantanamo Bay, Cuba, visited with members of the Colegio Medico Nacional of Santiago, Cuba. The visitors were Captain L. E. Tebow, Captain J. H. Boyers, LCDR S. L. Moschella, LCDR P. F. Wells, II, LT Orsen White, and LTJG R. K. Bath. Doctor Moschella presented a paper in Spanish entitled, "The Present Status of Treponemal Diseases." In addition to the presentation of the paper, several topics of mutual interest were discussed. This was the third meeting of its kind during the past year and the President of the Medical Society and host to the visitors, Dr. U. Castellanos Yodu, expressed the hope that these meetings could be continued. (NH, Guantanamo Bay)
9. Four Russian medical scientists arrived in the U. S. for a four weeks visit to study methods of treatment of poliomyelitis and the preparation of the Salk vaccine. The Russian scientists will be accompanied on their tour by Dr. Alexis I. Shelokov, virologist of the Public Health Service's National Institutes of Health. All four of the Russians are from the Academy of Medical Sciences of the U. S. S. R. (PHS, HEW)
10. Data concerning 64 children with primary renal tumors are recorded. These comprised 59 Wilms' tumors including 4 bilaterally, 3 papillary

adenocarcinomas, and 2 renal cell carcinomas. (J. Urol., December 1955; S.H. Johnson, III, and M. Marshall, Jr.

11. A modified sterile pilot tube for collection of donors' blood for cross-matching is described in Am. J. Clin. Path., December 1955; H. Chaplin Jr., M.D.

12. Twenty-two member states of UNESCO have named more than 180 laboratories and participants in a plan to aid the international exchange of scientific measuring instruments. Fifteen other countries have also expressed interest. A special label will allow shipments of instruments to be inspected for customs clearance in the sending and receiving laboratories rather than at customs depots. (Bulletin of Medical Research, November-December 1955)

13. This article records 4 cases of leiomyoma of the esophagus treated surgically and summarizes pertinent data from previously reported cases. (Am. J. Surg., January 1956; Capt. C.F. Storey, MC USN, Lt W.C. Adams Jr., MC USN)

14. Three types of human diabetes, all showing hyperglycemia and glycosuria are described and differentiated. The three types are lipoplethoric diabetes, insulin deficient diabetes, and lipoatrophic diabetes. (Ann. Int. Med., December 1955; R.D. Lawrence, M.D.)

15. Elderly patients with orthopedic problems should be treated with a view to comfort and preservation of life and limb rather than with primary concern for the correction of an orthopedic deformity. (J. Internat. Coll. Surg., December 1955; D.S. Miller, M.D., A. J. Harris, M.D.)

16. The mechanisms of normal and abnormal melanin pigmentation are discussed with special reference to the cytology of melanocytes, enzymic factors concerned with melanin formation, and hormonal and neurogenic control of melanocyte activity. (Am. J. Med., December 1955; A.B. Lerner, M.D.)

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Board Certifications

American Board of Dermatology and Syphilology
LT Crawford S. Brown MC USNR (Inactive)

American Board of Internal Medicine

LT Armon A. Cairo MC USNR (Inactive)
LTJG Robert J. Fahey MC USNR (Inactive)
LT James T. Wortham MC USNR (Active)

American Board of Obstetrics and Gynecology

LTJG Edward N. Horner MC USNR (Inactive)
LCDR Thomas B. Lebherz MC USN
LCDR Edwin T. MacCamy MC USNR (Inactive)
LT George W. Mitchell, Jr. MC USNR (Inactive)

American Board of Ophthalmology

LT Richard J. Broggi MC USNR (Inactive)
LTJG Byron H. Demorest MC USNR (Inactive)

American Board of Orthopedic Surgery

LTJG Henry H. Nash MC USNR (Inactive)

American Board of Psychiatry and Neurology

LT Daniel S. Feldman MC USNR (Active) (Neurology)
LCDR Stanley E. Willis II MC USN (Psychiatry)

American Board of Radiology

LT Peter G. Gleason MC USNR (Inactive)
LCDR Donald W. Spicer MC USN

American Board of Surgery

LT Robert V. Bourdeau MC USNR (Inactive)
LTJG Jean F. Crum MC USNR (Inactive)
LTJG Robert B. Leonard MC USNR (inactive)
CDR William B. Neal, Jr. MC USNR (Inactive)
LT Luther H. Parr MC USNR (Inactive)

American Board of Urology

LCDR Burdick G. Clarke MC USNR (Inactive)

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Correction

In the Medical News Letter of 6 January 1956, Vol. 27, No. 1, page 25, CDR Robert W. Mackie MC USN should be listed under American Board of Neurological Surgery.

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BUMED INSTRUCTION 5360.18

30 December 1955

From: Chief, Bureau of Medicine and Surgery
Commandant of the Marine Corps

To: All Ships and Stations

Subj: Decedent Affairs Program; eligibility and authorized expenses

Ref: (a) SecNavInst 5360.3, Subj: Decedent Affairs Program

Encl: (1) Decedent Affairs Program - Persons Eligible and Expenses
Authorized

This instruction revises and amplifies existing instructions relative to expenses authorized and categories of personnel eligible to receive benefits under the Decedent Affairs Program. Reference (a) establishes and defines the Decedent Affairs Program and sets forth the program's objectives and operational responsibilities.

The following material in the Manual of the Medical Department is canceled: Articles 17-30, 17-31, 17-47, 17-48, 17-49, 17-50, 17-51, 17-52, 17-53, 17-54, 17-57, 17-58, 17-59, 17-60, 17-63, 17-64, 17-65, 17-71, 17-72, 17-73, and the eligibility chart on page 17-25. Pending receipt of changes, part K, Chapter 55, and other portions of the Marine Corps Manual which are in conflict with the contents of this instruction are hereby superseded and canceled.

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BUMED INSTRUCTION 6710.25

6 January 1956

From: Chief, Bureau of Medicine and Surgery

To: All Ships and Stations

Subj: Defective medical and dental material; authority for disposition of

Ref: (a) Medical and Dental Materiel Bulletin, Edition No. 61 of
1 Dec 1955

(b) Art 25-21, ManMed

This instruction provides authority for the disposal of defective material listed in paragraph IV of reference (a).

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BUMED INSTRUCTION 5360.1A

6 January 1956

From: Chief, Bureau of Medicine and Surgery
Commandant of the Marine Corps

To: All Ships and Stations

Subj: Decedent Affairs Program; administrative and fiscal accounting instructions and establishment of effective date of the current-dead program in continental United States

Ref: (a) SecNavInst 5360.3, Subj: Decedent Affairs Program
(b) BuMedInst 5360.17, Subj: Decedent Affairs Program - current dead
(c) BuMedInst 5360.18, Subj: Decedent Affairs Program; eligibility and authorized expenses
(d) ManMedDept, Chapter 17
(e) MarCorps Manual, Chaps 13, 52, 53, and 54
(f) NavCompt Manual (NavExos P-1000, 1952) paras. 023304, 024343-4, 024404-3, and 026100-026115
(g) Section XIV, Field Accounting and Reporting Instructions for appropriation Marine Corps Troops and Facilities (NavMC 1092-FD)

This instruction establishes the effective date for the implementation of the current-dead program in the continental United States and revises administrative and fiscal accounting instructions for fiscal year 1956 relative to care and disposition of deceased Navy, Marine Corps, and certain other personnel.

The following directives are canceled:

- a. BuMed Instruction 5360.2 of 1 August 1952
- b. BuMed Instruction 5360.4 of 26 April 1954 (NOTAL)
- c. BuMed Instruction 5360.5 of 11 January 1954 (NOTAL)

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BUMED NOTICE 6320

9 January 1956

From: Chief, Bureau of Medicine and Surgery

To: Distribution List

Subj: U.S. Naval fixed medical treatment facilities; designation to provide inpatient and outpatient medical care for dependents

- Ref: (a) SecNav Notice 5450 of 27 Apr 1955 (NOTAL)
(b) BuMed Instruction 11110.1 of 3 Oct 1955
(c) U.S. Navy Regulations, 1948, Articles 0970 and 1281
(d) Manual of the Medical Department, 1953, Articles 5-9 and 21-4
- Encl: (1) Existing U.S. Naval Fixed Medical Treatment Facilities, Classification, Nomenclature, and Type of Dependent Care Authorized

This notice promulgates a complete list of currently designated U.S. Naval fixed medical treatment facilities, showing their classification and nomenclature in accordance with revised criteria contained in references (a) and (b), and designates those facilities which are authorized to provide medical care for dependents. The authorization indicated herein is applicable only to dependent care as provided within naval fixed medical treatment facilities. It is not intended to restrict the provision of medical care for dependents under emergency conditions, or when accomplished at non-naval medical facilities under sponsorship or cooperation of the staff of naval medical facilities in accordance with existing laws and regulations.

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BUMED INSTRUCTION 6010.8

11 January 1956

- From: Chief, Bureau of Medicine and Surgery
To: Commanding Officers, U.S. Naval Hospitals and Stations Having Station Hospitals
- Subj: Mechanical imprinting equipment in admission offices and on wards; guidelines for the use of
- Encl: (1) Ward plate holder; illustration of
(2) Use of mechanical imprinting equipment; illustration of

This instruction provides guidelines for the use of mechanical imprinting equipment in admission offices and on wards for recording patient-identifying information on administrative and clinical records and forms.

The use of mechanical imprinting equipment simplifies and shortens the interval of record preparation prior to initiation of medical treatment, reduces the clerical workload of the wards, and assures correct and legible identifying data on patients' clinical records and related forms.

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MEDICAL RESERVE SECTION

A Report on the Seminar for Commanding Officers of Reserve Medical Companies

Considered to be of noteworthy interest to Reservists who expect to attend future seminars convened in the Bureau of Medicine and Surgery, a portion of the report submitted by the representative of the Commanding Officer of Medical Company 9-1 on the seminar conducted 30 October through 5 November 1955 is reprinted herewith.

"From 30 October through 5 November, Commanding Officers or their representatives of certain Naval Reserve Medical Companies met in Washington. Having served as my C. O.'s representative at this seminar, I am submitting the following report which summarized the impressions received.

These remarks should be prefaced by the observation that the hazy ideas I held in regard to the functioning of the several Navy Bureaus and the top brass that run them at Navy Headquarters has had to be drastically revised as a result of this brief tour of duty. In the event you hold similar ideas, please be assured that these people are not dedicated to a blind maintenance of the status quo; they are not foggy about the problems in areas remote from Washington; they are not insensitive to the demands for change and improvement. On the contrary, it appeared that they have a clearer knowledge of the problems involved in the field than most of the units in the field do, for they are able to see them in relation to the whole Navy, not as separate from the Navy. Whereas our view of the forest is apt to be obscured by our own tree, theirs is a birds'eye view, and the more reliable because of it.

A week's time is certainly not sufficient for any deep penetration into the operations of even our small part of the vast Naval organization and no attempt was made to make it so. However, we were exposed to enough to get what is probably a fairly accurate impression of the over all Naval Medical situation as it now exists, of the direction it is taking, and some of the problems it faces. So anxious are they to provide an accurate picture, that each subject was presented to us by the top man concerned. As a consequence, addresses were given by the Surgeon General, the several Assistant Surgeon Generals, and the heads of various Naval Reserve branches in both the Bureau of Medicine and Surgery and the Bureau of Naval Personnel.

We were taken on tours of the National Naval Medical Center at Bethesda, Md., which included the hospital, the Naval Medical School, and the Naval Research Institute; of the Potomac River Naval Command where research in problems related to deep sea diving were in progress; of the fascinating and tremendously important Armed Forces Institute of Pathology which is located in its new windowless, blast-proof building on the grounds of the Walter Reed Hospital. At the Bureau of Naval Personnel, addresses were given on Naval Reserve problems, the point system, and methods of promotion.

It is fair to say that nicely interspersed through the seminar were excellent lunches in several well appointed officers' clubs and civilian hostelryes.

All this, played with an all star cast before a backdrop of the fabulous monumental and beautiful Washington, made an entertaining, informative and stimulating all too short tour of active duty. "

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New Courses Offered in Naval Reserve Officers' Schools

Two new courses of study are now available to inactive Reserve Medical Department officers enrolled in Naval Reserve Officers' Schools.

These courses parallel the correspondence courses on the same subject and, in addition to earning retirement points for attendance in scheduled classes, each course provides six points to be credited for purposes of promotion.

The courses are as follows:

Course 184 - Public Information. 20 drills. This course covers the public information and public relations policies and objectives of the Navy, accenting those phases of particular interest and applicability to officers of the Naval Reserve. The course touches upon all public information media including press, radio, and television, and emphasizes the importance of community relations.

Course 185 - Security of Classified Matter. 20 drills. This course is designed to thoroughly indoctrinate all officers in the requirements of a sound security system. In general, the course covers the custody, stowage, transmission, and dissemination of classified information.

See the Medical News Letter, Vol. 26, No. 9 page 29, dated 4 November 1955, for a listing of Naval Reserve Officers' Schools located throughout the continental United States. All Medical Department officers are eligible for enrollment in Naval Reserve Officers' Schools.

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PREVENTIVE MEDICINE SECTION

Safety Measures in the Tuberculosis Laboratory

In the July-August issue of the Medical Technicians Bulletin, an excellent article entitled, "Safety in a Tuberculosis Laboratory" appeared. Concurrently, a revision of "Tuberculosis Laboratory Methods," prepared by the Subcommittee on Laboratory Methods (Wm. Dye, Ch., W.C. Morse, R.A. Patnode, and E. Runyon) following the Fourteenth Veterans Administration - Army - Navy Conference on the Chemotherapy of Tuberculosis, was published. Because of the importance of proper personal precautions in such a laboratory, the safety measures outlined as follows by this subcommittee are considered important enough to be brought to the attention of all laboratory personnel.

In response to an expressed need for further specific recommendations, the following statement has been prepared:

"A well organized laboratory which is staffed with intelligent and careful workers is probably a safer place, from the standpoint of contracting infectious disease, than are crowded streetcars, stores, or theaters.

The most important safety precaution is diligent, intelligent carefulness. It is important, above all, to be ever mindful of the tendency to develop a false sense of security in using the various safety devices. None is infallible. The best 6-ply, close-fitting mask, for example, may approach 100% effectiveness, but the usual mask, as ordinarily worn, is certainly not nearly as good. Alcohol, employed as a disinfectant, may require several minutes to kill bacilli. No safety hood is perfect in removing all infected air from the work area; some eddies and cross-currents occur by which a portion of the infected air may escape from the hood and be inhaled by the worker. Furthermore, most safety devices impose somewhat awkward working conditions, and this may be at first a greater hazard than not to use the device, be it hood, rubber gloves, or pipette. It is essential to become proficient with any new device before using it with infectious material. There is no substitute for skill and care.

There follows a list of some specific hazards encountered in tuberculosis laboratories and of measures which may be taken to avoid or minimize them.

1. a. Aerosol formation (dispersal of infectious material) during the opening of specimen containers, especially if these have been tightly stoppered and stored where fermentation could occur.

Keep specimens refrigerated (if in stoppered containers).

Cover stopper or cap with cloth or cotton moistened with disinfectant when opening.

Work in safety hood. (See par. 2a.)

b. Aerosol formation during transfer of tuberculous material to microscope slides, digestion tubes, cultures, et cetera. Splashing may occur when pouring. If sputum is spread by pressing it between microscope slides, there may be a spattering of minute droplets when the slides are separated.

Work in safety hood.

Wear mask and other protective cover. (See par. 2b.)

Minimize spattering by using appropriate manipulation. Avoid bubble formation.

Use splash-proof containers (See par. 2c.) for contaminated waste.

Reduce to a minimum the movements of contaminated articles such as pipettes; have discard receptacles (See par. 2d.) close at hand.

c. Spattering attendant on flaming a transfer loop.

Clean loop in a flask containing sand and a disinfectant such as 5% phenol before flaming, or use enclosure around the flame, or other heating element.

d. Mouth-contacts with infectious material. Ingestion of tubercle bacilli may occur from aspirating the contents of a pipette or from a finger contamination by touching the end of a pipette.

All contacts with the mouth are to be avoided in contaminated areas: smoking, drinking, eating, and the use of mouth pipettes. Several types of pipettes with rubber bulbs are available, or a simple vacuum device may be used.

e. Contacts with contaminated material via hands, flies, pencils, et cetera.

All contaminated materials should be promptly enclosed in completely covered containers and promptly autoclaved or incinerated. Sputum smears should be fixed promptly. Hands should be washed frequently and

thoroughly, and rubbed with liberal amounts of 70% isopropyl or ethyl alcohol. Five percent cresol (phenol) or other effective disinfectant should be used at least once daily on all possibly contaminated areas.

f. Aerosol formation in grinding of tuberculous material with mortar and pestle or with a mechanical homogenizer.

Use safety hood; this is always important and particularly so if a paint-shaking machine is being employed.

The homogenizer should be enclosed in a towel dampened with disinfectant or in an air-tight shield and should be run at slow speed.

g. Infection from discharges of infected animals via flying fur, dust in animal room, and aerosol formation at inoculation or autopsy.

Maintain maximum cleanliness in animal quarters.

Use disinfectant oil on floors.

Wear protective caps, gloves, masks, and garments.

Wear plastic transparent face-shield and use needles which are locked to syringes for animal inoculations.

Autopsies on possibly tuberculous animals should be made in a special hood.

Do not autopsy animals before blood has had an opportunity to clot.

Provide convenient shower facilities.

h. Accidents such as breakage of glassware containing tuberculous material, especially when this occurs in centrifuge or shaking machine.

The worker must permit no distraction, be at all times alert and mindful of what he is doing, and be prepared to deal intelligently with any accident. Accidents in the centrifuge may be almost completely eliminated by a careful selection of centrifuge tubes with regard to proper size and freedom from flaws, use of the proper size cup and cushion, and use of padding if indicated.

Placement of the centrifuge and shaking machine in a cubicle equipped with ultraviolet irradiation and filtered exhaust is a wise precaution. A room in which any considerable dispersal of infectious material has occurred should remain tightly closed and unoccupied while ultraviolet irradiation (See par. 2e.) and vaporizing disinfectant are allowed to act.

2. There follows some description of the safety precautions which have been alluded to.

a. Safety bacteriological hoods generally have a sloping rather than a vertical glass front in order to provide close observation of the

work area. Close observation of minute details at autopsy makes a lower position of the glass desirable in an autopsy hood than in a hood where much pipetting is to be done or tall glassware is to be used. In any case, provision for easy access to the work area should be made. This may be accomplished either by having the glass hinged at the top, or better, sliding as a counter-poised window; the latter arrangement is superior in that it provides for adjustment to workers of different stature. The glass must be heat-resistant and should be enclosed in a metal frame.

Essential facilities within the hood are: gas, electricity, illumination, ultraviolet light, and receptacles for contaminated pipettes and other glassware.

Water and a source of negative pressure are desirable. Exhaust is, of course, essential, and it is desirable that it be variable. Only gentle air movement is permissible when the maintenance of sterility of plate cultures, for example, is a problem. Vigorous exhaust is needed routinely for operations where the risk of infection of the operator is the most important consideration. Air flow of at least 50 linear ft. per minute across the opening of the hood is advocated. Variable exhaust may be obtained easily by an adjustable opening (damper) between the exhaust fan and the hood. For eliminating infectious material from exhausted air, filtration units are perhaps most practical; gas or electric incineration may also be used. Information concerning these devices may be had from the Biology Laboratories of the Army Chemical Corps, S Division, Camp Dietrick, Frederick, Md.

Obviously, the portions of person and clothing which are near to, or protrude through, the opening of the hood are apt to become contaminated. Removal of protective garments and thorough washing of arms and hands are indicated before leaving the infected areas.

b. Uniforms are some protection, but since it is not feasible to remove or change them frequently during the course of a day, it is common to see them being worn, both in and outside of contaminated areas. They may thus become a means of spreading infection instead of a protection against it. Easily removable gowns should be used and disposed of in containers for autoclaving before being further handled. Street clothes and shoes should not be worn in the laboratory. Separate lockers should be provided for laboratory uniforms and shoes.

c. Splash-proof container: A can or jar which is closed except for a funnel at the top is usually employed. One may also use a 2-liter Erlenmeyer flask containing about 300 - 500 ml. of 5% phenol.

d. Discard receptacle: The suggested dimensions for receptacles which are used to carry contaminated materials to the autoclave are as follows: pipette cans, 18 x 5 x 3-1/2 inches deep; discard cans for other glassware, 10 x 9 x 5 inches deep. These receptacles should have snugly fitting covers which overhang the sides one-half inch or more.

e. Ultraviolet irradiation is efficient in killing bacteria directly exposed to it. Indirect ultraviolet is of undetermined value against tubercle bacilli. It must be remembered that the efficiency of most ultraviolet sources deteriorates with use. The ability of the glass to transmit germicidal wave-lengths diminishes so that a lamp which still seems to be burning brightly may have almost completely lost its effectiveness. Thin films of grease and dust likewise cut down very markedly the transmission of the shorter wavelengths. An ultraviolet meter may be used to determine when lamps should be replaced."

In addition to the safety measures outlined above, another facet of personal safety involves the cold disinfection of TB-contaminated objects. Considerable debate during recent years has centered about the efficacy of quarternary ammonium compounds against the M. tuberculosis bacillus. The great economy of using the quarternaries for routine disinfectant purposes was believed to warrant the rather rare risk of encountering tuberculosis contamination in the ordinary environment. It is felt, however, that the weakness of the quarternary disinfectants should be called to the attention of those in charge of laboratories, as well as of personnel actually engaged therein. A false sense of security may be, or may have been, engendered in personnel using these germicides for tuberculosis sterilization, because soap and water might be just as effective as phemerol or zephiran (which are also classed as detergents).

The following discussion is an excerpt from a letter from one authority who was queried on this subject:

"I believe most authorities recommend the use of phenolic soap mixtures or 70% ethyl or isopropyl alcohol for routine use as disinfectants in tuberculosis laboratories. The following are references concerning the use of these materials: (1) Fish, C.R. and Spendlove, G.A., Safety Measures in a Tuberculosis Laboratory, Public Health Reports, April 7, 1950, 65: 466-467. (2) Tuberculosis Laboratory Methods as Revised Following the Thirteenth Veterans Administration - Army - Navy Conference on the Chemotherapy of Tuberculosis, 1954 (available from Dr. A.M. Walker, VA Central Office, Washington, D. C.). (3) Willis, H.S. and Cummings, M.M., Diagnostic and Experimental Methods in Tuberculosis, 2nd Edition, 1952. The last reference states on page 54, 'Many

disinfecting solutions will kill the tubercle bacillus, but for practical purposes, carbolic acid in a strength of 2 to 5% is adequate for all needs about a laboratory. Some (Smith, C.R., Public Health Reports, Sept. 5, 1947, 62: 1285-1295) prefer 70% alcohol for general use. Commercial crude carbolic acid is cheaper and as potent as C. P. Phenol and is applicable to laboratory purposes. ' The use of alcohol is based on the evaluation against tubercle bacilli only and not against pathogenic fungi. In our medical mycology areas, we routinely use a 5% solution of lysol as a surface and general disinfectant. "

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Distribution of Poliomyelitis Vaccine

(This begins a series of articles intended to apprise Medical Department personnel of the current status of distribution of poliomyelitis vaccine to be used for dependents of Navy and Marine Corps personnel.)

Supplement 1 of BuMed Instruction 6230.8 was released on December 16, 1955, announcing the general plan for distribution of poliomyelitis vaccine for use by military dependents within the continental United States.

On December 2, 1955, the Commandant of each Naval District and River Command within the continental United States was asked to obtain and submit the number of dependents aged 6 months through 14 years from each activity geographically located within his district that would be responsible for administration of the vaccine. The following table gives the number of activities in each district responsible for vaccination of dependents against poliomyelitis and the total number of dependents within the specified age range reported to the Bureau of Medicine and Surgery as of January 6, 1956. It also shows the percentage of total dependents aged 6 months through 14 years located in each naval district and river command and the amount of poliomyelitis vaccine that has been shipped to activities within each district.

The 21,780 cc. of vaccine shown in Table I was the total amount available in the Navy supply system as of January 10, 1956. Currently recommended age priorities cover only a 10-year span within the 6 months through 14-year old age range. Consequently, this vaccine, available for distribution in the first shipment, will supply only slightly more than one-ninth of the total requirement for first doses in children within proper age priority groups.

The vaccine was shipped directly to those activities designated by the Commandants as responsible for its administration. In several naval districts, where activities were reported as being responsible for fewer than 60 dependents, these activities were supplied with their total requirement

for the first dose on the first shipment for logistic reasons, thus slightly diminishing the percentage of the total vaccine which was shipped to activities responsible for a larger dependent population. No further shipments will be made to these small activities until the requirement for the first dose in all other activities has been shipped.

Table I

| District | Number of Activities | Number of Dependents Age 6 Months through 14 Years | Percent of Total | Number cc. Vaccine First Shipment |
|----------|----------------------------|--|------------------------|--|
| 1 | 7 | 15,821 | 8.7 | 1,890 |
| 3 | 11 | 6,200 | 3.4 | 738 |
| 4 | 36 | 6,306 | 3.5 | 765 |
| SRNC | 1 | 1,036 | 0.7 | 153 |
| PRNC | 3 | 11,633 | 6.4 | 1,404 |
| 5 | 19 | 51,650 | 28.5 | 6,201 |
| 6 | 24 | 23,646 | 13.0 | 2,835 |
| 8 | 15 | 7,842 | 4.3 | 936 |
| 9 | 54 | 10,067 | 5.6 | 1,215 |
| 11 | 11 | 32,171 | 17.7 | 3,852 |
| 12 | 12 | 9,094 | 5.0 | 1,089 |
| 13 | 16 | 5,668 | 3.2 | 702 |
| TOTAL | 209 | 181,134 | 100.0 | 21,780 cc |

Additional allocations of vaccine will be received in the Navy supply system and shipped on this same percentage basis as received. Further anticipated receipts during January 1956 will probably amount to about 31,000 cc.

Vaccine was supplied to all overseas activities during the fall of 1955 to meet requirements for immunization of all children aged 6 months through 15 years of age and of pregnant women. It is recognized that the continued movement of personnel will move unvaccinated dependents to these overseas areas, but as yet no plan has been evolved for further shipments of vaccine to overseas areas, largely because of the short supply in terms of requirements in continental United States. Consideration has been given to proposals that dependents be immunized prior to departure for overseas areas—particularly those areas with high endemic poliomyelitis rates—but the short supply of vaccine prohibits adoption of any such plan at present. Further consideration will be given to the overseas problem in tri-service meetings to determine distribution policies, and, undoubtedly, some additional distribution will be made in the late spring of 1956. (Captain J. R. Seal, MC USN, PrevMedDiv., BuMed)

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Hazards Encountered in Void Spaces Where
Flameproof Mattress Covers are Stored

A naval officer was found dead in a A-501A compartment of an aircraft carrier. Shortly after the body was removed, an inspection of the compartment was made with the aid of an oxygen breathing mask. It was noted that approximately 200 Covers, cotton, flameproof, for built-in bunks, Stock No. GF27-C-3173-100 were stored in this area, and that considerable mold was present on these covers. Air analyses were done and showed 9 - 12% CO₂ and 2 - 3.8% oxygen. Material Laboratory personnel later identified the mold as Aspergillus Glaucus. A sample of the mold-covered material rapidly consumed the oxygen in a quart jar, whereas a sample of equal size when sterilized and similarly stored in a jar did not. It was concluded that the mold had consumed the oxygen in the compartment. Another death and two narrow escapes have been reported under similar circumstances.

In view of the fleet-wide stocking of flameproofed mattress covers (Cover, bedding, flameproof, Stock No. GF27-C-3173-100), it is recommended that all ships and stations be alerted to the possibility that these items are contributing to the health hazard involved in entering void spaces. It is also suggested, that all personnel be reindoctrinated as to the precautions which must be observed in entering void spaces. These precautions may be summarized as follows:

1. No person shall enter any closed compartment or poorly ventilated space in any naval or Navy operated vessel unless and until a "gas free" certificate for such compartment or space has been issued by the safety

engineer or other authorized person. This shall certify that the danger of poisoning or suffocation of personnel, or the danger of ignition or explosion of inflammable gases has been eliminated or reduced to the lowest practical minimum by the use of adequate mechanical ventilation.

2. Any person entering a void space, in which there is the slightest chance of poisonous gas or lack of oxygen, shall be required to (1) wear an approved rescue breathing apparatus; (2) attach a safety line to himself; and (3) maintain direct communication with someone outside. (Industrial Health Report, Boston Naval Shipyard, October 1955)

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Estimation of Coliform Density by Membrane Filter
and Fermentation Tube Methods

An investigation of a proposed membrane filter coliform standard for potable water shows decided advantages in using the new analytical tool. It is true that in the present stage of development, the coliform recovery efficiency of membrane filter techniques in some waters may be lower than that of the standard fermentation tube method. However, the analysis indicates that this disadvantage is more than balanced by the gains achieved.

Table I. Probability of Detecting Acceptable Water Samples

| | Average Density per 100 ml. | Standard 5 Tube Most Probable Number | | Single MF 50 ml. | | Single MF 200 ml. | |
|-----------------|--------------------------------------|---|----------|---------------------|----------|----------------------|----------|
| | | Rejected | Accepted | Rejected | Accepted | Rejected | Accepted |
| Potable | 1.0 | 0.7% | 99.3% | 1.4% | 98.6% | 0.1% | 99.9% |
| Non- potable | 10.0 | 75.0% | 25.0% | 87.5% | 12.5% | 99.9% | 0.1% |

Table I indicates that there is a greater chance of potable water being rejected by the Membrane Filter (MF) method than by the Most Probable Number (MPN) method. On the other hand, there is less chance of nonpotable water being accepted by the MF method which shows a discrepancy between the MF and the standard 5 tube MPN; however, the margin of error is definitely on the safe side for the MF.

With the shorter processing time, the capacity for testing larger more representative sample volumes, the easy transportation of filtered

samples, the superior degree of preservation of the original density obtained on transported filters, and the substantial increase in precision, membrane filter techniques, as presently developed, provide opportunity for improved potability control of water supplies. The adoption of the membrane filter method as an alternative standard procedure for the measurement of coliform density would constitute a signal advance in sanitary engineering practice.

Table II. Recovery Comparison of Samples at Various Holding Times with Membrane Filter and Most Probable Number

| Holding Time | | 0 days | 1 day | 2 days | 3 days |
|----------------|---------|--------|-------|--------|--------|
| Recovery Ratio | MPN/MPN | 1.0 | 0.63 | 0.23 | 0.09 |
| | MF/MPN | 0.7 | 0.65 | 0.67 | 0.69 |

Table II shows the effects of delayed laboratory analysis on the original samples. It shows that the original sample held for analysis by "Standard Methods" becomes worthless in a short while, whereas the MF determination is not seriously affected by delay. This point alone demonstrates the practical value to the Armed Forces of the MF method, since it is not always possible to have the sample reach the laboratory within the space of a few hours and to have it protected properly enroute. The study indicates a loss in recovery by the MF during the initial test, but shows a far greater recovery by the MF at the end of the 2- and 3-day holding periods. (Thomas, H. A. Jr., S. D. Woodward, R. L., Ph. D., Estimation of Coliform Density by the Membrane Filter and the Fermentation Tube Methods: Am. J. Pub. Health, November 1955)

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Salmonellosis Originating in a Hospital

A high degree of perspicacity in bacteriologic and epidemiologic investigation uncovered an unusual source of Salmonella infection among patients in a large general hospital. Five patients contracted salmonellosis under conditions which clearly indicated that the infection had been acquired in the hospital. The usual investigation of contacts, foods, and food service personnel did not reveal a possible origin of these infections.

Moreover, three different types of Salmonella had caused the infections, making it doubtful that a common source was responsible. A review of all the data revealed that the only thing in common between the patients, who were scattered throughout the hospital, was that they were receiving or had received tube feedings.

Further investigation of the ingredients of the liquid diets used in these feedings indicated that all had contained dried brewer's yeast. Sampling of lots of the dried inactive yeast was carried out on the premise that the degree of contamination was small, and large aliquots were used. All three types of Salmonella were recovered from these large samples, whereas the usual sampling technics did not recover any organisms.

The source of contamination of the yeast was finally traced to a ventilating duct introducing outside air to the manufacturer's building in rooms where the final stages of milling, screening, and packaging were carried out. When filters were installed in these ducts, contamination was stopped.

Thus, from five widely scattered cases of salmonellosis in one hospital, a previously unsuspected source was uncovered which probably prevented many such infections in hospitals throughout the country. Particularly unique was the source of contamination of the yeast: fresh air drawn from outside the building in which the product was processed. (Kunz, L. J., Ouchterlony, O. T. G., New England J. Med., 253: 761-763, November 3, 1955)

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